

In re Appln. of CHAWLA et al.
Application No. 10/008,489

REMARKS

Status of the Application

Claims 1-65 are currently pending and under examination in the present application in view of the withdrawal of the restriction requirement. Correction of the record in this regard is respectfully requested, as the Office Action (prior to the introduction of new claims 50-65) erroneously indicates that claims 1-44 only are pending.

Summary of the Office Action

The Office Action of April 16, 2004, opens by advising applicants that the restriction requirement and election of species requirement entered in the prior application are withdrawn.

Claims 1-6, 11, 12 and 15-44 are rejected as anticipated by WO 99 50368A (the "'368 Publication"), and also by U.S. Patent 6,472,451 to Ha et al. (the "Ha patent"). The Action asserts that the '368 Publication and Ha patent teach a radiation-curable adhesive and disc lacquer for a DVD that includes at least two substrates bonded together by the adhesive. The adhesive comprises: (a) a UV or radiation-curable acrylate component that undergoes polymerization (cationic) when exposed to radiation, (b) a non-acrylate functional reactive diluent comprising a component capable of radical polymerization, (c) at least one acrylate functional reactive diluent, (d) about 0.5 to about 10 wt.% of at least one radical forming sulfur compound, preferably a thiol compound, and (e) about 0.1 to 15 wt.% of one or more photoinitiators such as mercaptobenzothiazoles ("MBT"), mercaptobenzoxazoles ("MBO") or hexaryl bisimidazole. The examiner takes the position that the limitations regarding DVD performance are either explicitly or inherently disclosed in the '368 Publication and the Ha patent.

Claims 7-10, 13 and 14 are also rejected obvious over the '368 Publication and the Ha patent. The Action advises that the '368 Publication and Ha patent do not specifically teach the compounds as claimed, but it would have been obvious to one skilled in the art to utilize the instantly claimed compounds considering they are structurally and functionally equivalent to the compounds taught by the '368 Publication and the Ha patent.

Summary of the Present Invention

The present invention provides adhesive and lacquer compositions that may be desirably used to prepare DVDs as well as optical media (e.g., DVDs).

The claimed compositions may be cationic systems, hybrid systems, or, more desirably, free radical systems. Regardless of the system, however, and among other components, each system includes both a photoinitiator and at least one of several specific

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Application No. 10/008,489

compounds which have been found to inhibit corrosion of the metallic layer of optical media. Examples of the latter corrosion inhibitors (which are distinct from photoinitiators) include MBT and MBO. *See, e.g., page 33 of the application (Table) in which MBO is included in addition to a photoinitiator.*

In connection with a preferred aspect of the present invention, it was also unexpectedly discovered that the corrosion inhibiting components, e.g., R-SH and R¹-R² compounds, are desirably limited to relatively low amounts. The use of such compounds in relatively significant amounts, it was found, resulted in relatively low cure rates, and a relatively low overall cure of the compositions. Preferably, then, the amount of these compounds is limited to no more than about 0.3 wt.%, more preferably to no more than about 0.1 wt.%, still more preferably to no more than about 0.05 wt.% and most preferably no more than about 0.01 wt.% of the composition. *See, e.g., page 9 of application, as well as claims 4, 25, 36, 42 and 50-65.*

Discussion of Rejections

Rejection of Claims 1-6, 11, 12 and 15-44

The Office Action suggests that all the limitations recited in claims 1-6, 11, 12 and 15-44 are disclosed and taught by the cited prior art. Applicants submit, however, that the broad disclosure provided by the cited prior art neither discloses, or teaches, the use of the specific compounds recited in the composition and optical media claims, nor the advantages associated with using limited amounts of certain compounds. Absent this teaching, one skilled in the art would not be motivated to select the specific compounds used in the claimed invention, or to otherwise modify the prior art compositions to provide the claimed adhesive and optical media.

At the outset, the Office Action contends that the cited prior art discloses and teaches the use of components (a)-(e), and that the claims are thus anticipated by these references. However, applicants submit that this methodology evidences hindsight analysis. The disclosure provided in the cited prior art disclosure is very broad, and there is no disclosure or teaching provided therein that would direct one skilled in the art to select the specific components recited in the action (i.e., (a)-(e)) over others disclosed in the cited prior art. On this basis alone, applicants submit that the anticipation rejection is improper, and that any obviousness rejection based on these references is also improper due to a lack of teaching or direction to select the specific components required in the claims.

Other bases compelling withdrawal of the rejection also exist. For example, and as discussed previously, the claimed invention relies in part on the recognition that a combination of photoinitiators and certain compounds that were found to inhibit corrosion

In re Appln. of CHAWLA et al.
Application No. 10/008,489

may provide advantages over the compositions disclosed in the prior art, in cationic systems as well as in the preferred free radical systems.

Assuming for a moment the Action's characterization of the disclosure and teaching of the cited prior art is proper, the '368 Publication and related Ha patent disclose and teach the use of a variety of reactive components in combination with what the Office Action characterizes as "one or more photoinitiators such as [MBT, MBO] or hexaryl bisimidazone" *See Office Action, page 3.* The Action uses this as a basis for concluding that the claimed corrosion inhibiting components are disclosed and taught by the cited prior art.

However, the disclosure and teaching of the prior art is much broader than as characterized in the Action. Indeed, prior to that passage, the cited prior art discloses and teaches that "[t]he composition may optionally further comprises at least one photoinitiator," further indicating that "conventional photoinitiators can be used." A list of conventional photoinitiators follows in the prior art, with two being identified as being preferred (DAROCURE and IRGACURE). This disclosure and teaching is very general, failing to point out any criticality associated with the photoinitiator component, or give one skilled in the art any direction to use components such as those claimed as opposed to, or in addition to, the numerous photoinitiators generically identified in the cited prior art.

In fact, the disclosure and teaching associated with MBT and MBO in the cited prior art is limited to their characterization as chain transfer agents among the more general description of photoinitiators :

[o]ther suitable chain transfer agents include [MBTs, MBOs] and hexaryl bisimidazole. Often, mixtures of photoinitiators provide a suitable balance of properties.

The photoinitiators are taught to be used in sufficient quantity to provide fast cure speed, reasonable cost, good surface, through (sic) cure and lack of yellowing upon aging. Typical amounts can be about 0.1 to about 15 wt. %.

See, e.g., Ha patent, col. 9, line 66 to col. 10, line 17.

The foregoing disclosure is so broad that it cannot be fairly said to disclose the use of the specific combination claimed in the present invention, e.g., a photoinitiator and one or more R-SH and R¹-R² compounds in a cationic system or a free radical system. While the prior art states that "often, mixtures of photoinitiators provide a suitable balance of properties," no other statements, or teaching, is provided to direct one to select a combination of a so-called "chain transfer agent" and a photoinitiator from the vast array of compounds disclosed. There is simply no recognition of any performance relationship between a photoinitiator and the R-SH and R¹-R² compounds, as discovered by applicants (as described in the present application and set forth in the claims).

In re Appln. of CHAWLA et al.
Application No. 10/008,489

Moreover, the cited prior art discloses and teaches little in the way of limitations regarding the amount of photoinitiator that may be used—disclosing a very broad range of 0.1 to 15 wt.%. No criticality is associated with that range. In contrast, applicants surprisingly discovered, as part of the present invention, that the amount of the R-SH and R¹-R² compounds affects performance. This relationship is not recognized in the cited prior art. As a consequence, applicants submit that those claims which reflect this distinction, e.g., claims 4, 25, 36, 42 and 50-65, among others, are patentable over the cited prior art.

Moreover, the cited prior art is directed to hybrid adhesive systems, including both cationic and free radical systems. That a component provides a benefit in a hybrid system does not necessarily indicate that the component will have the same function or benefit in a solely cationic or solely free radical system. In the context of the present application, one skilled in the art would not necessarily expect that the inclusion of so-called “chain transfer agents” used in the cited prior art would have a beneficial function in cationic or free radical systems. On this basis, those claims limited solely to free radical systems or cationic systems are patentable over the cited prior art, e.g., 15 and 31 (cationic) and 32-43 and 56-61 (free radical).

For these reasons, it is respectfully requested that the anticipation and obviousness rejections of claims 1-6, 11, 12 and 15-44 be withdrawn.

Rejection of Claims 7-10, 13 and 14

Claims 7-10, 13 and 14 are rejected as obvious over the '368 Publication and the Ha patent.

Applicants respectfully request withdrawal of the obviousness rejection for the reasons set forth above in connection with the rejection of claims 1-6, 11, 12 and 15-44.

Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

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Respectfully submitted,



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